



## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

**RTID 0648-XB074**

#### **Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys off of New Jersey**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice; Issuance of an Incidental Harassment Authorization.

**SUMMARY:** In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to Ocean Wind, LLC (Ocean Wind) to incidentally harass, by Level B harassment only, marine mammals during marine site characterization surveys off of New Jersey in the area of Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf Lease Areas OCS-A 0498 and OCS-A 0532 (Lease Area) and potential export cable routes to landfall locations in New Jersey.

**DATES:** This Authorization is effective for a period of one year, from May 10, 2021 through May 9, 2022.

**FOR FURTHER INFORMATION CONTACT:** Ben Laws, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: [www.fisheries.noaa.gov/action/incidental-take-authorization-ocean-wind-llc-marine-site-characterization-surveys-new-jersey](https://www.fisheries.noaa.gov/action/incidental-take-authorization-ocean-wind-llc-marine-site-characterization-surveys-new-jersey). In case of problems accessing these documents, please call the contact listed above.

**SUPPLEMENTARY INFORMATION:**

## **Background**

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

## **Summary of Request**

On December 11, 2020, NMFS received a request from Ocean Wind for an IHA to take marine mammals incidental to marine site characterization surveys off of New Jersey in the Lease Area and potential export cable routes (ECRs) to landfall locations in New Jersey. Following NMFS review of the draft application, a revised version was submitted on February 23, 2021. That revised version was deemed adequate and

complete on March 9, 2020. Ocean Wind's request is for take of 16 species of marine mammals, by Level B harassment only. Neither Ocean Wind nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued an IHA to Ocean Wind for similar work in the same geographic area on June 8, 2017 (82 FR 31562; July 7, 2017) with effective dates from June 8, 2017, through June 7, 2018. Ocean Wind complied with all the requirements (*e.g.*, mitigation, monitoring, and reporting) of the previous IHA.

## **Description of Proposed Activity**

### *Overview*

As part of its overall marine site characterization survey operations, Ocean Wind plans to conduct high-resolution geophysical (HRG) surveys in the Lease Area and along potential ECRs to landfall locations in New Jersey.

The purpose of the marine site characterization surveys are to obtain an assessment of seabed (geophysical, geotechnical, and geohazard), ecological, and archeological conditions within the footprint of a planned offshore wind facility development. Surveys are also conducted to support engineering design and to map unexploded ordnance. Underwater sound resulting from Ocean Wind's site characterization survey activities, specifically HRG surveys, has the potential to result in incidental take of marine mammals in the form of Level B behavioral harassment.

### *Dates and Duration*

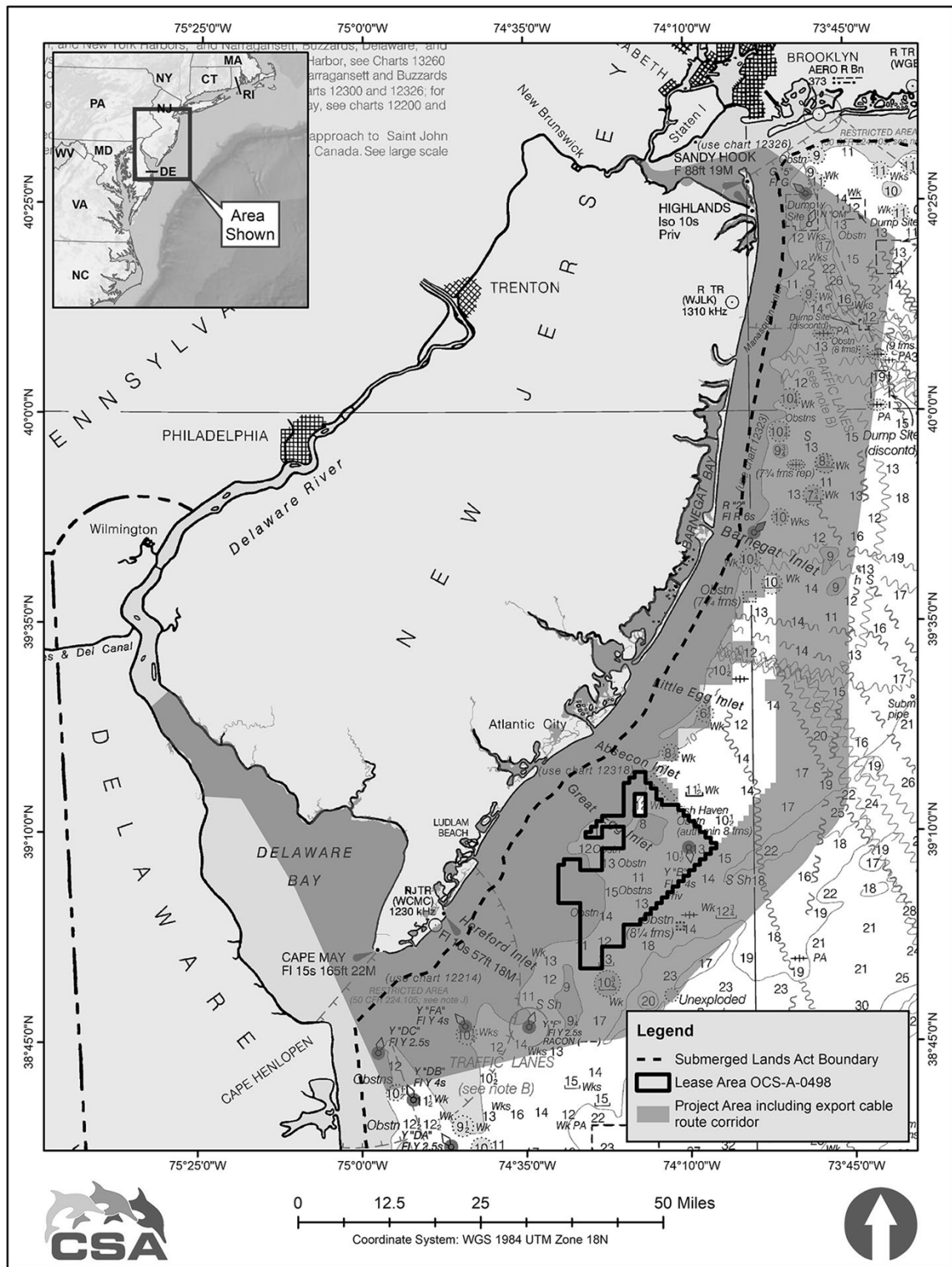
The estimated duration of HRG survey activity is expected to be up to 275 survey days over the course of a single year, with a "survey day" defined as a 24-hour (hr) activity period. Ocean Wind plans to start survey activity as soon as possible in spring 2021. The IHA is effective for one year, from May 10, 2021, through May 9, 2022.

This schedule is based on 24-hr operations and includes potential down time due to inclement weather. Although some shallow-water locations may be surveyed by

smaller vessels that would operate during daylight hours only, the estimated total number of survey days assumes uniform 24-hr operations. The number of estimated survey days varies between the Lease Area and ECR area, with 142 vessel survey days expected in the Lease Area and 133 vessel survey days in the ECR area.

#### *Specific Geographic Region*

The survey activities will occur within the Project Area which includes the Lease Area and potential ECRs, as shown in Figure 1. The Lease Area is approximately 649 square kilometers (km<sup>2</sup>) and is within the Bureau of Ocean Energy Management's New Jersey Wind Energy Area (WEA). Water depths in the Lease Area range from 15 meters (m) to 35 m, and the potential ECRs extend from the shoreline to approximately 40 m depth.



**Figure 1—Site Characterization Survey Location, Including the Lease Area and Potential ECRs**

*Detailed Description of Specific Activity*

Ocean Wind plans to conduct HRG survey operations, including multibeam depth sounding, seafloor imaging, and shallow and medium penetration sub-bottom profiling. The HRG surveys may be conducted using any or all of the following equipment types: side scan sonar, multibeam echosounder, magnetometers and gradiometers, parametric sub-bottom profiler (SBP), CHIRP SBP, boomers, or sparkers. Ocean Wind assumes that HRG survey operations would be conducted 24 hours per day, with an assumed daily survey distance of 70 km. Vessels would generally conduct survey effort at a transit speed of approximately 4 knots (kn), which equates to 110 km per 24-hr period. However, based on past survey experience (*i.e.*, knowledge of typical daily downtime due to weather, system malfunctions, etc.) Ocean Wind assumes 70 km as the average daily distance. On this basis, a total of 275 survey days (142 survey days in the Lease Area and 133 survey days in the ECR area) are expected. In certain shallow-water areas, vessels may conduct survey effort during daylight hours only, with a corresponding assumption that the daily survey distance would be halved (35 km). However, for purposes of analysis all survey days are assumed to cover the maximum 70 km. A maximum of 2 vessels would operate concurrently in areas where 24-hr operations would be conducted, with an additional third vessel potentially conducting daylight-only survey effort in shallow-water areas.

The following acoustic sources planned for use during Ocean Wind's HRG survey activities are conservatively assumed to have the potential to result in incidental take of marine mammals:

- Shallow penetration, non-impulsive, non-parametric SBPs (*i.e.*, CHIRP SBPs) are used to map the near-surface stratigraphy (top 0 to 10 m) of sediment below seabed. A CHIRP system emits signals covering a frequency sweep from approximately 2 to 20 kHz over time. The frequency range can be adjusted to meet project variables.

These sources are typically mounted on a pole rather than towed, reducing the likelihood that an animal would be exposed to the signal; and

- Medium penetration, impulsive sources (*i.e.*, boomers and sparkers) are used to map deeper subsurface stratigraphy. A boomer is a broadband source operating in the 3.5 Hz to 10 kHz frequency range. Sparkers create omnidirectional acoustic pulses from 50 Hz to 4 kHz. These sources are typically towed behind the vessel.

Additional acoustic sources not expected to have the potential to cause take of marine mammals were described in the notice of proposed IHA (86 FR 17783; April 6, 2021). Table 1 identifies representative survey equipment with the expected potential to result in exposure of marine mammals and potentially result in take. The make and model of the listed geophysical equipment may vary depending on availability and the final equipment choices will vary depending upon the final survey design, vessel availability, and survey contractor selection.

**Table 1—Summary of Representative HRG Equipment**

Equipment	Operating Frequency (kHz)	SL <sub>rms</sub> (dB re 1 $\mu$ Pa m)	SL <sub>0-pk</sub> (dB re 1 $\mu$ Pa m)	Pulse Duration (width) (millisecond)	Repetition Rate (Hz)	Beamwidth (degrees)	CF= Crocker and Fratantonio (2016) MAN = Manufacturer
Non-parametric shallow penetration SBPs (non-impulsive)							
ET 216 (2000DS or 3200 top unit)	2–16 2–8	195	-	20	6	24	MAN
ET 424	4–24	176	-	3.4	2	71	CF
ET 512	0.7–12	179	-	9	8	80	CF
GeoPulse 5430A	2–17	196	-	50	10	55	MAN
Teledyne Benthos Chirp III - TTV 170	2–7	197	-	60	15	100	MAN
Medium penetration SBPs (impulsive)							
AA, Dura-spark UHD (400 tips, 500 J) <sup>1</sup>	0.3–1.2	203	211	1.1	4	Omni	CF
AA, triple plate S-Boom (700–1,000 J) <sup>2</sup>	0.1–5	205	211	0.6	4	80	CF

- = not applicable;  $\mu$ Pa = micropascal; AA = Applied Acoustics; dB = decibel; ET = EdgeTech; J = joule; Omni = omnidirectional source; re = referenced to; PK = zero-to-peak sound pressure level; SL = source level; SPL = root-mean-square sound pressure level; UHD = ultra-high definition.

<sup>1</sup>The Dura-spark measurements and specifications provided in Crocker and Fratantonio (2016) were used for all sparker systems proposed for the survey. These include variants of the Dura-spark sparker system and various configurations of the GeoMarine Geo-Source sparker system. The data provided in Crocker and Fratantonio (2016) represent the most applicable data for similar sparker systems with comparable operating methods and settings when manufacturer or other reliable measurements are not available.

<sup>2</sup>Crocker and Fratantonio (2016) provide S-Boom measurements using two different power sources (CSP-D700 and CSP-N). The CSP-D700 power source was used in the 700 J measurements but not in the 1,000 J measurements. The CSP-N source was measured for both 700 J and 1,000 J operations but resulted in a lower SL; therefore, the single maximum SL value was used for both operational levels of the S-Boom.



Mitigation, monitoring, and reporting measures are described in detail later in this document (please see **Mitigation** and **Monitoring and Reporting**).

### **Comments and Responses**

A notice of NMFS' proposal to issue an IHA to Ocean Wind was published in the **Federal Register** on April 6, 2021 (86 FR 17783). During the 30-day comment period, NMFS did not receive any substantive public comments.

### **Description of Marine Mammals in the Area of Specified Activities**

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; [www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments](http://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments)) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS' website ([www.fisheries.noaa.gov/find-species](http://www.fisheries.noaa.gov/find-species)).

Table 2 lists all species or stocks for which take is expected and proposed to be authorized for this action, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, NMFS follows the Committee on Taxonomy (2020). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs). While no mortality is anticipated or would be authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included as gross indicators of the status of the species and other threats.



Sperm whale	<i>Physeter macrocephalus</i>	North Atlantic	E/D; Y	4,349 (0.28;3,451; 2016)	3.9	0
Family Delphinidae						
Long-finned pilot whale	<i>Globicephala melas</i>	WNA	-/-; N	39,215 (0.30; 30,627; 2016)	306	21
Short finned pilot whale	<i>Globicephala macrorhynchus</i>	WNA	-/-; N	28,924 (0.24; 23,637; 2016)	236	160
Bottlenose dolphin	<i>Tursiops truncatus</i>	WNA Offshore	-/-; N	62,851 (0.23; 51,914; 2016)	519	28
		WNA Northern Migratory Coastal	-/D;Y	6,639 (0.41, 4,759, 2016)	48	12.2- 21.5
Common dolphin	<i>Delphinus delphis</i>	WNA	-/-; N	172,974 (0.21; 145,216; 2016)	1,452	399
Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>	WNA	-/-; N	93,233 (0.71; 54,443; 2016)	544	26
Atlantic spotted dolphin	<i>Stenella frontalis</i>	WNA	-/-; N	39,921 (0.27; 32,032; 2016)	320	0
Risso's dolphin	<i>Grampus griseus</i>	WNA	-/-; N	35,493 (0.19; 30,289; 2016)	303	54.3
Family Phocoenidae (porpoises)						
Harbor porpoise	<i>Phocoena phocoena</i>	Gulf of Maine/Bay of Fundy	-/-; N	95,543 (0.31; 74,034; 2016)	851	217
Order Carnivora – Superfamily Pinnipedia						
Family Phocidae (earless seals)						
Gray seal <sup>4</sup>	<i>Halichoerus grypus</i>	WNA	-/-; N	27,131 (0.19; 23,158, 2016)	1,389	4,729
Harbor seal	<i>Phoca vitulina</i>	WNA	-/-; N	75,834 (0.15; 66,884, 2012)	2,006	350

<sup>1</sup>ESA status: Endangered (E), Threatened (T) / MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

<sup>2</sup>NMFS marine mammal stock assessment reports online at: [www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments](http://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments). CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.

<sup>3</sup>These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike).

<sup>4</sup>NMFS' stock abundance estimate (and associated PBR value) applies to U.S. population only. Total stock abundance (including animals in Canada) is approximately 451,431. The annual M/SI value given is for the total stock.

As indicated above, all 16 species (with 17 managed stocks) in Table 2 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. In addition to what is included in Sections 3 and 4 of the application, the SARs, and NMFS' website, further detail informing the baseline for select species (*i.e.*, information regarding current Unusual Mortality Events (UME) and important habitat areas) was provided in the notice of proposed IHA (86 FR 17783; April 6, 2021) and is not repeated here. No new information is available since publication of that notice.

### *Marine Mammal Hearing*

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (e.g., Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound

was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

**Table 3—Marine Mammal Hearing Groups (NMFS, 2018)**

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, <i>Kogia</i> , river dolphins, cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i> )	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz
* Represents the generalized hearing range for the entire group as a composite ( <i>i.e.</i> , all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall <i>et al.</i> 2007) and PW pinniped (approximation).	

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.*, 2006; Kastelein *et al.*, 2009).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Sixteen marine mammal species (14 cetacean and 2 pinniped (both phocid) species) have the reasonable potential to co-occur with the proposed survey activities. Please refer to Table 2. Of the cetacean species that may be present, five are classified as low-frequency cetaceans (*i.e.*, all mysticete species), eight are classified as mid-frequency cetaceans (*i.e.*, all delphinid species and the sperm whale), and one is classified as a high-frequency cetacean (*i.e.*, harbor porpoise).

## **Potential Effects of Specified Activities on Marine Mammals and their Habitat**

The notice of proposed IHA included a summary of the ways that Ocean Wind's specified activity may impact marine mammals and their habitat (86 FR 17783; April 6, 2021). Detailed descriptions of the potential effects of similar specified activities have been provided in other recent **Federal Register** notices, including for survey activities using the same methodology, over a similar amount of time, and occurring within the same specified geographical region (*e.g.*, 82 FR 20563, May 3, 2017; 85 FR 36537, June 17, 2020; 85 FR 37848, June 24, 2020; 85 FR 48179, August 10, 2020). No significant new information is available, and we refer the reader to the notice of proposed IHA and to these documents rather than repeating the details here. The **Estimated Take** section includes a quantitative analysis of the number of individuals that are expected to be taken by Ocean Wind's activity. The **Negligible Impact Analysis and Determination** section considers the potential effects of the specified activity, the **Estimated Take** section, and the **Mitigation** section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks. The notice of proposed IHA also provided background information regarding active acoustic sound sources and acoustic terminology, which is not repeated here.

The potential effects of Ocean Wind's specified survey activity are expected to be limited to Level B behavioral harassment. No permanent or temporary auditory effects, or significant impacts to marine mammal habitat, including prey, are expected.

### **Estimated Take**

This section provides an estimate of the number of incidental takes authorized through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities.

Except with respect to certain activities not pertinent here, section 3(18) of the MMPA

defines “harassment” as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes are by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to noise from certain HRG acoustic sources. Based primarily on the characteristics of the signals produced by the acoustic sources planned for use, Level A harassment is neither anticipated (even absent mitigation), nor authorized. Consideration of the anticipated effectiveness of the mitigation measures (*i.e.*, exclusion zones and shutdown measures), discussed in detail below in the **Mitigation** section, further strengthens the conclusion that Level A harassment is not a reasonably anticipated outcome of the survey activity. As described previously, no serious injury or mortality is anticipated or authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the take estimates.

#### *Acoustic Thresholds*

NMFS uses acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

*Level B Harassment* – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007; Ellison *et al.*, 2012). NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals may be behaviorally harassed (*i.e.*, Level B harassment) when exposed to underwater anthropogenic noise above received levels of 160 dB re 1  $\mu$ Pa (rms) for the impulsive sources (*i.e.*, boomers, sparkers) and non-impulsive, intermittent sources (*e.g.*, CHIRP SBPs) evaluated here for Ocean Wind’s activity.

*Level A Harassment* – NMFS’ Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). For more information, see NMFS’ 2018 Technical Guidance, which may be accessed at [www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance](http://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance).

Ocean Wind’s activity includes the use of impulsive (*i.e.*, sparkers and boomers) and non-impulsive (*e.g.*, CHIRP SBP) sources. However, as discussed above, NMFS has concluded that Level A harassment is not a reasonably likely outcome for marine



mammals exposed to noise through use of the sources proposed for use here, and the potential for Level A harassment is not evaluated further in this document. Please see Ocean Wind's application for details of a quantitative exposure analysis exercise, *i.e.*, calculated Level A harassment isopleths and estimated Level A harassment exposures. Maximum estimated Level A harassment isopleths were less than 5 m for all sources and hearing groups with the exception of an estimated 37 m zone calculated for high-frequency cetaceans during use of the GeoPulse 5430 CHIRP SBP (see Table 1 for source characteristics). Ocean Wind did not request authorization of take by Level A harassment, and no take by Level A harassment is authorized by NMFS.

#### *Ensonified Area*

NMFS has developed a user-friendly methodology for estimating the extent of the Level B harassment isopleths associated with relevant HRG survey equipment (NMFS, 2020). This methodology incorporates frequency and directionality to refine estimated ensonified zones. For acoustic sources that operate with different beamwidths, the maximum beamwidth was used, and the lowest frequency of the source was used when calculating the frequency-dependent absorption coefficient (Table 1).

NMFS considers the data provided by Crocker and Fratantonio (2016) to represent the best available information on source levels associated with HRG equipment and, therefore, recommends that source levels provided by Crocker and Fratantonio (2016) be incorporated in the method described above to estimate isopleth distances to harassment thresholds. In cases when the source level for a specific type of HRG equipment is not provided in Crocker and Fratantonio (2016), NMFS recommends that either the source levels provided by the manufacturer be used, or, in instances where source levels provided by the manufacturer are unavailable or unreliable, a proxy from Crocker and Fratantonio (2016) be used instead. Table 1 shows the HRG equipment types

that may be used during the survey activity and the source levels associated with those HRG equipment types.

Results of modeling using the methodology described above indicated that, of the HRG survey equipment planned for use by Ocean Wind that has the potential to result in Level B harassment of marine mammals, the Applied Acoustics Dura-Spark UHD and GeoMarine Geo-Source sparkers would produce the largest Level B harassment isopleth (141 m; please see Table 4 of Ocean Wind's application). Estimated Level B harassment isopleths associated with the boomer and CHIRP SBP systems planned for use are estimated as 34 and 48 m, respectively. Although Ocean Wind does not expect to use sparker sources on all planned survey days, it assumed for purposes of analysis that the sparker would be used on all survey days. This is a conservative approach, as the actual sources used on individual survey days may produce smaller harassment distances.

#### *Marine Mammal Occurrence*

In this section, NMFS provides information about the presence, density, or group dynamics of marine mammals that informs the take calculations.

Habitat-based density models produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts *et al.*, 2016, 2017, 2018, 2020) represent the best available information regarding marine mammal densities in the survey area. The density data presented by Roberts *et al.* (2016, 2017, 2018, 2020) incorporates aerial and shipboard line-transect survey data from NMFS and other organizations and incorporates data from 8 physiographic and 16 dynamic oceanographic and biological covariates, and controls for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. These density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al.*, 2016). In subsequent years, certain models have been updated based on additional data as well as certain methodological improvements. More information is available online at

[seamap.env.duke.edu/models/Duke-EC-GOM-2015/](http://seamap.env.duke.edu/models/Duke-EC-GOM-2015/). Marine mammal density estimates in the survey area (animals/km<sup>2</sup>) were obtained using the most recent model results for all taxa (Roberts *et al.*, 2016, 2017, 2018, 2020). The updated models incorporate additional sighting data, including sightings from NOAA's Atlantic Marine Assessment Program for Protected Species (AMAPPS) surveys.

For the exposure analysis, density data from Roberts *et al.* (2016, 2017, 2018, 2020) were mapped using a geographic information system (GIS). Density grid cells that included any portion of the survey area were selected for all survey months (see Figure 3 in Ocean Wind's application).

Densities from each of the selected density blocks were averaged for each month available to provide monthly density estimates for each species (when available based on the temporal resolution of the model products), along with the average annual density. Please see Tables 7 and 8 of Ocean Wind's application for density values used in the exposure estimation process for the Lease Area and the potential ECRs, respectively. Note that no density estimates are available for the portion of the ECR area in Delaware Bay, so the marine mammal densities from the density models of Roberts *et al.* were assumed to apply to this area. Additional data regarding average group sizes from survey effort in the region was considered to ensure adequate take estimates are evaluated.

#### *Take Calculation and Estimation*

Here NMFS describes how the information provided above is brought together to produce a quantitative take estimate. In order to estimate the number of marine mammals predicted to be exposed to sound levels that would result in harassment, radial distances to predicted isopleths corresponding to Level B harassment thresholds are calculated, as described above. The maximum distance (*i.e.*, 141 m distance associated with sparkers) to the Level B harassment criterion and the estimated trackline distance traveled per day

by a given survey vessel (*i.e.*, 70 km) are then used to calculate the daily ensonified area, or zone of influence (ZOI) around the survey vessel.

The ZOI is a representation of the maximum extent of the ensonified area around a sound source over a 24-hr period. The ZOI for each piece of equipment operating below 200 kHz was calculated per the following formula:

$$\text{ZOI} = (\text{Distance/day} \times 2r) + \pi r^2$$

Where r is the linear distance from the source to the harassment isopleth.

ZOIs associated with all sources with the expected potential to cause take of marine mammals are provided in Table 6 of Ocean Wind's application. The largest daily ZOI (19.8 km<sup>2</sup>), associated with the various sparkers proposed for use, was applied to all planned survey days.

Potential Level B harassment exposures are estimated by multiplying the average annual density of each species within either the Lease Area or potential ECR area by the daily ZOI. That product is then multiplied by the number of operating days expected for the survey in each area assessed, and the product is rounded to the nearest whole number. These results are shown in Table 4.

**Table 4—Summary of Authorized Take Numbers**

Species		Abundance	Level B Harassment Takes <sup>1</sup>	Max Percent Population
North Atlantic right whale		412	9	2.18
Fin whale		6,802	6	0.09
Sei whale		6,292	0 (1)	0.02
Minke whale		21,968	2	0.01
Humpback whale		1,393	2	0.14
Sperm whale <sup>3</sup>		4,349	0 (3)	0.07
Atlantic white-sided dolphin		93,233	16	0.02
Atlantic spotted dolphin		39,921	3	0.01
Common bottlenose dolphin <sup>2</sup>	Offshore Stock	62,851	262	0.42
	Migratory Stock	6,639	1,410	21.24
Pilot Whales <sup>3</sup>	Short-finned pilot whale	28,924	2	0.01
	Long-finned pilot whale	39,215	2	0.01
Risso's dolphin		35,493	0 (30)	0.08
Common dolphin		172,974	124	0.07
Harbor porpoise		95,543	91	0.10
Seals <sup>4</sup>	Gray seal	451,431	11	0.00

	Harbor seal	75,834	11	0.01
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<sup>1</sup>Parentheses denote take authorization where different from calculated take estimates. Increases from calculated values are based on assumed average group size for the species; sei whale, Kenney and Vigness-Raposa, 2010; sperm whale and Risso's dolphin, Barkaszi and Kelly, 2018.

<sup>2</sup>Roberts *et al.* (2016) does not provide density estimates for individual stocks of common bottlenose dolphins; therefore, stock densities were delineated using the 20-m isobath. Coastal migratory stock dolphins are assumed to occur inshore of this line and offshore stock dolphins are assumed to occur offshore of this line.

<sup>3</sup>Roberts (2018) only provides density estimates for pilot whales as a guild. The pilot whale density values were applied to both species of pilot whale; therefore, the total authorized take number for pilot whales (4) is double the estimated take number for the guild.

<sup>4</sup>Roberts (2018) only provides density estimates for seals without differentiating by species. Harbor seals and gray seals are assumed to occur equally; therefore, density values were split evenly between the two species, *i.e.*, total estimated take for "seals" is 22.

The take numbers shown in Table 4 are those requested by Ocean Wind. NMFS concurs with the requested take numbers has authorized them. Previous monitoring data compiled by Ocean Wind (available online at: [www.fisheries.noaa.gov/action/incidental-take-authorization-ocean-wind-marine-site-characterization-surveys-offshore-new](http://www.fisheries.noaa.gov/action/incidental-take-authorization-ocean-wind-marine-site-characterization-surveys-offshore-new)) suggests that the authorized take numbers are sufficient.

## Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal

species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider such things as cost and impact on operations.

#### *Mitigation for Marine Mammals and their Habitat*

NMFS has prescribed the following mitigation measures to be implemented during Ocean Wind's marine site characterization surveys.

#### *Marine Mammal Exclusion Zones and Harassment Zones*

Marine mammal exclusion zones (EZ) must be established around the HRG survey equipment and monitored by protected species observers (PSOs):

- 500 m EZ for North Atlantic right whales during use of all acoustic sources.
- 100 m EZ for all marine mammals, with certain exceptions specified below, during operation of impulsive acoustic sources (boomer and/or sparker).

If a marine mammal is detected approaching or entering the EZs during the HRG survey, the vessel operator must adhere to the shutdown procedures described below to minimize noise impacts on the animals. These stated requirements will be included in the site-specific training to be provided to the survey team.

#### *Pre-Clearance of the Exclusion Zones*

Ocean Wind must implement a 30-minute pre-clearance period of the exclusion zones prior to the initiation of ramp-up of HRG equipment. During this period, the exclusion zone will be monitored by the PSOs, using the appropriate visual technology. Ramp-up may not be initiated if any marine mammal(s) is within its respective exclusion

zone. If a marine mammal is observed within an exclusion zone during the pre-clearance period, ramp-up may not begin until the animal(s) has been observed exiting its respective exclusion zone or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes and seals, and 30 minutes for all other species).

#### *Ramp-Up of Survey Equipment*

When technically feasible, a ramp-up procedure must be used for HRG survey equipment capable of adjusting energy levels at the start or restart of survey activities. The ramp-up procedure must be used at the beginning of HRG survey activities in order to provide additional protection to marine mammals near the survey area by allowing them to vacate the area prior to the commencement of survey equipment operation at full power.

A ramp-up must begin with the powering up of the smallest acoustic HRG equipment at its lowest practical power output appropriate for the survey. When technically feasible, the power will then be gradually turned up and other acoustic sources added.

Ramp-up activities will be delayed if a marine mammal(s) enters its respective exclusion zone. Ramp-up will continue if the animal has been observed exiting its respective exclusion zone or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes and seals and 30 minutes for all other species).

Activation of survey equipment through ramp-up procedures may not occur when visual observation of the pre-clearance zone is not expected to be effective (*i.e.*, during inclement conditions such as heavy rain or fog).

#### *Shutdown Procedures*

An immediate shutdown of the impulsive HRG survey equipment will be required if a marine mammal is sighted entering or within its respective exclusion zone. The vessel operator must comply immediately with any call for shutdown by the Lead PSO. Any disagreement between the Lead PSO and vessel operator should be discussed only after shutdown has occurred. Subsequent restart of the survey equipment can be initiated if the animal has been observed exiting its respective exclusion zone or until an additional time period has elapsed (*i.e.*, 30 minutes for all other species).

If a species for which authorization has not been granted, or, a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the Level B harassment zone (48 m, non-impulsive; 141 m impulsive), shutdown must occur.

If the acoustic source is shut down for reasons other than mitigation (*e.g.*, mechanical difficulty) for less than 30 minutes, it may be activated again without ramp-up if PSOs have maintained constant observation and no detections of any marine mammal have occurred within the respective exclusion zones. If the acoustic source is shut down for a period longer than 30 minutes and PSOs have maintained constant observation, then pre-clearance and ramp-up procedures will be initiated as described in the previous section.

The shutdown requirement will be waived for small delphinids of the following genera: *Delphinus*, *Lagenorhynchus*, *Stenella*, and *Tursiops* and seals. Specifically, if a delphinid from the specified genera or a pinniped is visually detected approaching the vessel (*i.e.*, to bow ride) or towed equipment, shutdown is not required. Furthermore, if there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs must use best professional judgement in making the decision



to call for a shutdown. Additionally, shutdown is required if a delphinid or pinniped detected in the exclusion zone and belongs to a genus other than those specified.

### *Vessel Strike Avoidance*

Ocean Wind will ensure that vessel operators and crew maintain a vigilant watch for cetaceans and pinnipeds and slow down or stop their vessels to avoid striking these species. Survey vessel crew members responsible for navigation duties will receive site-specific training on marine mammals sighting/reporting and vessel strike avoidance measures. Vessel strike avoidance measures include the following, except under circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

- Vessel operators and crews must maintain a vigilant watch for all protected species and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any protected species. A visual observer aboard the vessel must monitor a vessel strike avoidance zone based on the appropriate separation distance around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.*, PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to 1) distinguish protected species from other phenomena and 2) broadly to identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal;
- All survey vessels, regardless of size, must observe a 10-knot speed restriction in specific areas designated by NMFS for the protection of North Atlantic right whales from vessel strikes including seasonal management areas (SMAs) and dynamic management areas (DMAs) when in effect;

- All vessels greater than or equal to 19.8 m in overall length operating from November 1 through April 30 will operate at speeds of 10 knots or less while transiting to and from Project Area;

- All vessels must reduce their speed to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel;

- All vessels must maintain a minimum separation distance of 500 m from right whales. If a whale is observed but cannot be confirmed as a species other than a right whale, the vessel operator must assume that it is a right whale and take appropriate action;

- All vessels must maintain a minimum separation distance of 100 m from sperm whales and all other baleen whales;

- All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel);

- When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained; and

- These requirements do not apply in any case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.

Members of the monitoring team will consult NMFS North Atlantic right whale reporting system and Whale Alert, as able, for the presence of North Atlantic right whales throughout survey operations, and for the establishment of a DMA. If NMFS should establish a DMA in the survey area during the survey, the vessels will abide by speed restrictions in the DMA.

Project-specific training will be conducted for all vessel crew prior to the start of a survey and during any changes in crew such that all survey personnel are fully aware and understand the mitigation, monitoring, and reporting requirements. Prior to implementation with vessel crews, the training program will be provided to NMFS for review and approval. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew member understands and will comply with the necessary requirements throughout the survey activities.

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, NMFS has determined that the mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

### **Monitoring and Reporting**

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Effective reporting is critical both to

compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

#### *Monitoring Measures*

Visual monitoring will be performed by qualified, NMFS-approved PSOs, the resumes of whom will be provided to NMFS for review and approval prior to the start of survey activities. Ocean Wind must employ independent, dedicated, trained PSOs, meaning that the PSOs must 1) be employed by a third-party observer provider, 2) have no tasks other than to conduct observational effort, collect data, and communicate with

and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and 3) have successfully completed an approved PSO training course appropriate for their designated task. On a case-by-case basis, non-independent observers may be approved by NMFS for limited, specific duties in support of approved, independent PSOs on smaller vessels with limited crew capacity operating in nearshore waters.

The PSOs will be responsible for monitoring the waters surrounding each survey vessel to the farthest extent permitted by sighting conditions, including exclusion zones, during all HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established exclusion zones during survey activities. It will be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate.

During all HRG survey operations (*e.g.*, any day on which use of an HRG source is planned to occur), a minimum of one PSO must be on duty during daylight operations on each survey vessel, conducting visual observations at all times on all active survey vessels during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset). Two PSOs will be on watch during nighttime operations. The PSO(s) will ensure 360° visual coverage around the vessel from the most appropriate observation posts and will conduct visual observations using binoculars and/or night vision goggles and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least 2 hours between watches and may conduct a maximum of 12 hours of observation per 24-hr period. In cases where multiple vessels are surveying

concurrently, any observations of marine mammals will be communicated to PSOs on all nearby survey vessels.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to exclusion zones. Reticulated binoculars must also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine mammals. During nighttime operations, night-vision goggles with thermal clip-ons and infrared technology will be used. Position data will be recorded using hand-held or vessel GPS units for each sighting.

During good conditions (*e.g.*, daylight hours; Beaufort sea state (BSS) 3 or less), to the maximum extent practicable, PSOs will also conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the active acoustic sources. Any observations of marine mammals by crew members aboard any vessel associated with the survey will be relayed to the PSO team. Data on all PSO observations will be recorded based on standard PSO collection requirements. This will include dates, times, and locations of survey operations; dates and times of observations, location and weather; details of marine mammal sightings (*e.g.*, species, numbers, behavior); and details of any observed marine mammal behavior that occurs (*e.g.*, noted behavioral disturbances).

### *Reporting Measures*

Within 90 days after completion of survey activities or expiration of this IHA, whichever comes sooner, a final technical report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes the number of marine mammals observed during survey activities (by species, when known), summarizes the mitigation actions taken during surveys (including what type of mitigation and the species and number of animals that

prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS. All draft and final marine mammal and acoustic monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.Laws@noaa.gov*. The report must contain at minimum, the following:

- PSO names and affiliations;
- Dates of departures and returns to port with port name;
- Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort;
- Vessel location (latitude/longitude) when survey effort begins and ends; vessel location at beginning and end of visual PSO duty shifts;
- Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;
- Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon;
- Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions); and
- Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.*, pre-clearance survey, ramp-up, shutdown, end of operations, etc.).

If a marine mammal is sighted, the following information should be recorded:

- Watch status (sighting made by PSO on/off effort, opportunistic, crew,

alternate vessel/platform);

- PSO who sighted the animal;
- Time of sighting;
- Vessel location at time of sighting;
- Water depth;
- Direction of vessel's travel (compass direction);
- Direction of animal's travel relative to the vessel;
- Pace of the animal;
- Estimated distance to the animal and its heading relative to vessel at initial

sighting;

- Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species;

- Estimated number of animals (high/low/best);
- Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);

- Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);

- Detailed behavior observations (*e.g.*, number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);

- Animal's closest point of approach and/or closest distance from the center point of the acoustic source;

- Platform activity at time of sighting (*e.g.*, deploying, recovering, testing, data acquisition, other); and



- Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action.

If a North Atlantic right whale is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, Ocean Wind must immediately report sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System: (866) 755-6622. North Atlantic right whale sightings in any location may also be reported to the U.S. Coast Guard via channel 16.

In the event that Ocean Wind personnel discover an injured or dead marine mammal, Ocean Wind will report the incident to the NMFS Office of Protected Resources (OPR) and the NMFS New England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

In the unanticipated event of a ship strike of a marine mammal by any vessel involved in the activities covered by the IHA, Ocean Wind must report the incident to the NMFS OPR and the NMFS New England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Species identification (if known) or description of the animal(s) involved;

- Vessel's speed during and leading up to the incident;
- Vessel's course/heading and what operations were being conducted (if applicable);
- Status of all sound sources in use;
- Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;
- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
- Estimated size and length of animal that was struck;
- Description of the behavior of the marine mammal immediately preceding and following the strike;
- If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
- Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
- To the extent practicable, photographs or video footage of the animal(s).

### **Negligible Impact Analysis and Determination**

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses

(*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. NMFS also assesses the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, our analysis applies to all the species listed in Table 4, given that NMFS expects the anticipated effects of the survey to be similar in nature. Where there are meaningful differences between species or stocks—as is the case of the North Atlantic right whale—they are included as separate subsections below. NMFS does not anticipate that serious injury or mortality would occur as a result from HRG surveys, even in the absence of mitigation, and no serious injury or mortality is authorized. As discussed in the **Potential Effects** section of the notice of proposed IHA (86 FR 17783; April 6, 2021), non-auditory physical effects and vessel strike are not expected to occur. NMFS expects that all potential takes would be in the form of short-term Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.*, Southall *et al.*, 2007). Even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. As described above, Level A harassment is not expected to occur given the nature of the operations, the estimated size of the Level A harassment zones, and the required shutdown zones for certain activities.

In addition to being temporary, the maximum expected harassment zone around a survey vessel is 141 m. Although this distance is assumed for all survey activity in estimating take numbers evaluated here, in reality much of the survey activity will involve use of non-impulsive acoustic sources with a reduced acoustic harassment zone of 48 m, producing expected effects of particularly low severity. Therefore, the ensonified area surrounding each vessel is relatively small compared to the overall distribution of the animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as prey species are mobile and are broadly distributed throughout the survey area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

There are no rookeries, mating or calving grounds known to be biologically important to marine mammals within the survey area and there are no feeding areas known to be biologically important to marine mammals within the survey area. There is no designated critical habitat for any ESA-listed marine mammals in the survey area.

#### *North Atlantic Right Whales*

The status of the North Atlantic right whale population is of heightened concern and, therefore, merits additional analysis. As discussed in the notice of proposed IHA (86 FR 17783; April 6, 2021), elevated North Atlantic right whale mortalities began in June 2017 and there is an active UME. Overall, preliminary findings support human interactions, specifically vessel strikes and entanglements, as the cause of death for the majority of right whales. As noted previously, the survey area overlaps a migratory

corridor biologically important area (BIA) for North Atlantic right whales. Due to the fact that the survey activities are temporary and the spatial extent of sound produced by the survey will be very small relative to the spatial extent of the available migratory habitat in the BIA, right whale migration is not expected to be impacted by the survey. Given the relatively small size of the ensonified area, it is unlikely that prey availability would be adversely affected by HRG survey operations. Required vessel strike avoidance measures will also decrease risk of ship strike during migration; no ship strike is expected to occur during Ocean Wind's activities. Additionally, only very limited take by Level B harassment of North Atlantic right whales has been requested and is being authorized by NMFS as HRG survey operations are required to maintain a 500 m EZ and shutdown if a North Atlantic right whale is sighted at or within the EZ. The 500 m shutdown zone for right whales is conservative, considering the Level B harassment isopleth for the most impactful acoustic source (*i.e.*, sparker) is estimated to be 141 m, and thereby minimizes the potential for behavioral harassment of this species. As noted previously, Level A harassment is not expected due to the small PTS zones associated with HRG equipment types planned for use. NMFS does not anticipate North Atlantic right whales takes that would result from Ocean Wind's activities would impact annual rates of recruitment or survival. Thus, any takes that occur will not result in population level impacts.

#### *Other Marine Mammal Species with Active UMEs*

As discussed in the notice of proposed IHA (86 FR 17783; April 6, 2021), there are several active UMEs occurring in the vicinity of Ocean Wind's survey area. Elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through Florida since January 2016. Of the cases examined, approximately half had evidence of human interaction (ship strike or entanglement). The UME does not yet provide cause for concern regarding population-level impacts. Despite the UME, the relevant population of

humpback whales (the West Indies breeding population, or DPS) remains stable at approximately 12,000 individuals.

Beginning in January 2017, elevated minke whale strandings have occurred along the Atlantic coast from Maine through South Carolina, with highest numbers in Massachusetts, Maine, and New York. This event does not provide cause for concern regarding population level impacts, as the likely population abundance is greater than 20,000 whales.

Elevated numbers of harbor seal and gray seal mortalities were first observed in July 2018 and have occurred across Maine, New Hampshire, and Massachusetts. Based on tests conducted so far, the main pathogen found in the seals is phocine distemper virus, although additional testing to identify other factors that may be involved in this UME are underway. The UME does not yet provide cause for concern regarding population-level impacts to any of these stocks. For harbor seals, the population abundance is over 75,000 and annual M/SI (350) is well below PBR (2,006) (Hayes *et al.*, 2020). The population abundance for gray seals in the United States is over 27,000, with an estimated abundance, including seals in Canada, of approximately 450,000. In addition, the abundance of gray seals is likely increasing in the U.S. Atlantic as well as in Canada (Hayes *et al.*, 2020).

The required mitigation measures are expected to reduce the number and/or severity of takes for all species listed in Table 4, including those with active UMEs, to the level of least practicable adverse impact. In particular they would provide animals the opportunity to move away from the sound source throughout the survey area before HRG survey equipment reaches full energy, thus preventing them from being exposed to sound levels that have the potential to cause injury (Level A harassment) or more severe Level B harassment. No Level A harassment is anticipated, even in the absence of mitigation measures, or authorized.

NMFS expects that takes will be in the form of short-term Level B behavioral harassment by way of brief startling reactions and/or temporary vacating of the area, or decreased foraging (if such activity was occurring)—reactions that (at the scale and intensity anticipated here) are considered to be of low severity, with no lasting biological consequences. Since both the sources and marine mammals are mobile, animals will only be exposed briefly to a small ensonified area that might result in take. Additionally, required mitigation measures would further reduce exposure to sound that could result in more severe behavioral harassment.

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality or serious injury is anticipated or authorized;
- No Level A harassment (PTS) is anticipated, even in the absence of mitigation measures, or authorized;
- Foraging success is not likely to be significantly impacted as effects on species that serve as prey species for marine mammals from the survey are expected to be minimal;
- The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the survey area during the planned survey to avoid exposure to sounds from the activity;
- Take is anticipated to be primarily Level B behavioral harassment consisting of brief startling reactions and/or temporary avoidance of the survey area;
- While the survey area is within areas noted as a migratory BIA for North Atlantic right whales, the activities will occur in such a comparatively small area such that any avoidance of the survey area due to activities will not affect migration. In

addition, the requirement to shut down at 500 m to minimize potential for Level B behavioral harassment would limit any take of the species; and

- The required mitigation measures, including visual monitoring and shutdowns, are expected to minimize potential impacts to marine mammals.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS finds that the total marine mammal take from the activity will have a negligible impact on all affected marine mammal species or stocks.

### **Small Numbers**

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one-third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

NMFS has authorized incidental take of 16 marine mammal species (with 17 managed stocks). The total amount of takes authorized relative to the best available population abundance is less than 22 percent for one stock (bottlenose dolphin northern coastal migratory stock), less than 3 percent for the North Atlantic right whale, and less than 1 percent for all other species and stocks, which NMFS finds are small numbers of



marine mammals relative to the estimated overall population abundances for those stocks. See Table 4.

Based on the analysis contained herein of the activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

### **Unmitigable Adverse Impact Analysis and Determination**

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

### **National Environmental Policy Act**

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must evaluate our proposed action (*i.e.*, the issuance of the incidental take authorization) and alternatives with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which NMFS has not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review.

### **Endangered Species Act**

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or

carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS OPR consults internally whenever we propose to authorize take for endangered or threatened species, in this case with NMFS Greater Atlantic Regional Fisheries Office (GARFO).

The NMFS OPR is authorizing the incidental take of four species of marine mammals which are listed under the ESA: fin, sei, sperm, and North Atlantic right whales. We requested initiation of consultation under section 7 of the ESA with NMFS GARFO for the issuance of this IHA. NMFS GARFO determined that issuance of the IHA to Ocean Wind is not likely to adversely affect the North Atlantic right, fin, sei, and sperm whale or the critical habitat of any ESA-listed species or result in the take of any marine mammals in violation of the ESA.

#### **Authorization**

NMFS has issued an IHA to Ocean Wind for the potential harassment of small numbers of 16 marine mammal species incidental to conducting marine site characterization surveys offshore of New Jersey and along potential submarine cable routes to a landfall location in New Jersey provided the previously mentioned mitigation, monitoring and reporting requirements are followed.

Date: May 11, 2021.

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Catherine Marzin,

Acting Director, Office of Protected Resources,

National Marine Fisheries Service.